Year 8 Home Learning

Autumn term 1 2026

Aspiration

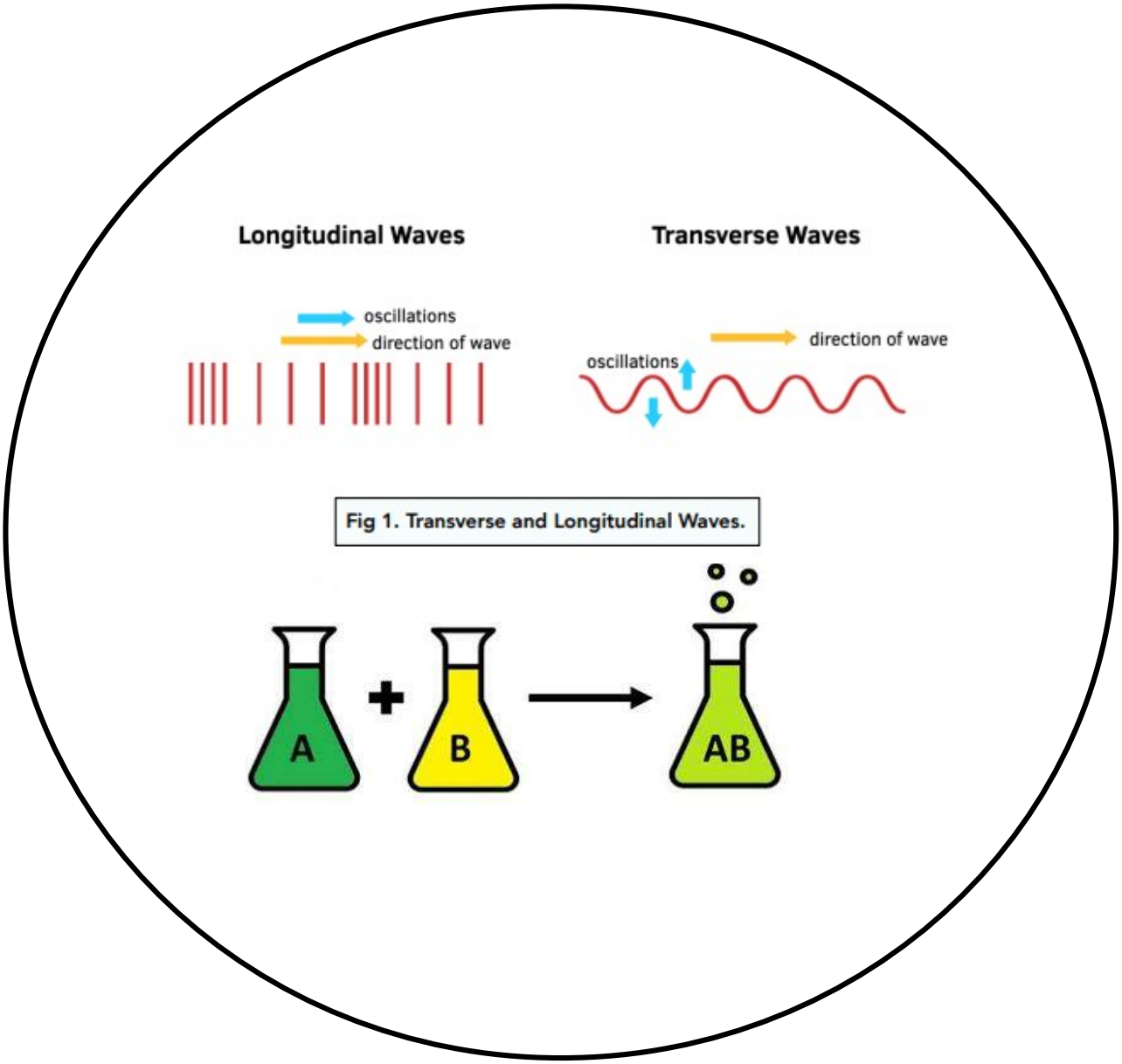


Fig 1. Transverse and Longitudinal Waves.

Home Learning expectations

- -Written by yourself, in your own words.
- -Completed by the due date.
- -Finished to the best of your ability.
- -Closely followed the instructions.
- -Green penned and improved when needed.
- -Peer or self-assessed when asked to.
- -Presented so it is clear and neat
- -Proof read the work to ensure spelling, punctuation and grammar is to the best of your ability.

Due Date: _____

Task 1

Topic: Waves – Key words and definitions

Instructions: Using the booklet and the internet, research and fill in the missing blanks using the word bank below.

Work bank: bounces • brain • colours • direction • ear • hertz • medium • peak • refraction • rest • second • signals • speed • vibrates

Keyword	**Definition (a least 2 sentences, include any equations if necessary)**	**Example / drawing to help remember**
Wavelength		
Amplitude		
Frequency		
Eardrum		
Auditory Nerve		
Reflection		
Refraction		
Dispersion		

Teacher ticks here	Tick	Student comment: How to improve
Excellent homework **(good comment)**		
Good/completed		
Requires improvement		
Incomplete/unsatisfactory		

Peer assessed / Self-

Due Date: _____

Task 2

Topic: How science works – Variables and graph plotting

Instructions: Complete the tasks below

Key information:

Independent variable: The variable that the investigator deliberately changes or selects different values for. There should only be one independent variable per investigation.
Dependent variable: The variable that is measured or observed as a result of changing the independent variable. It 'depends on' the independent variable.
Control variable: Any variable that is kept constant throughout an investigation to ensure the test is fair. If a control variable changed, it could affect the dependent variable and make results unreliable.

1. Match each term to its correct definition. [4 mark s]

Independent variable	The variable deliberately changed by the investigator
Dependent variable	A data point that does not fit the pattern of the other results
Control variable	A variable kept constant to ensure a fair test
Anomalous result	The variable measured as a result of the investigation

2. A student measures the loudness of a sound. They move a speaker further away from a sound meter and record the loudness of the sound.

a) What is the **independent variable**? (The variable that is being changed by the experimenter). Give the unit for this variable that could be used to measure (2 marks)

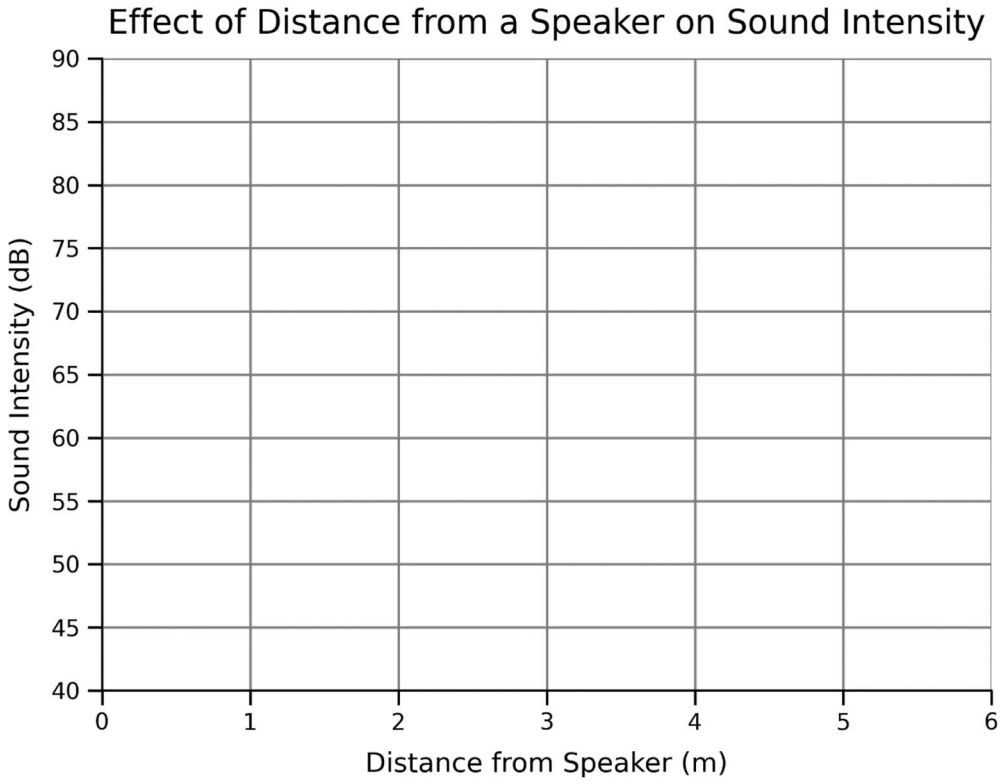
b) What is the **dependent variable**? (the variable being measured by the experimenter). Give the unit for this variable that could be used to measure (2 marks)

c) Give one **control variable**. (variables that must stay the same to ensure the test is fair) Give the unit for this variable that could be used to measure (2 marks)

d) Make a prediction about how the loudness changes as the speaker moves further away. (2 marks)

e) The results are shown below. Finish the line graph by plotting the plots and drawing a line of best fit to show visually represent the findings:

Distance from Speaker (m)	Sound Intensity (dB)
1	80
2	72
3	66
4	61
5	57
6	54



Checklist

Plots drawn correctly ☐

A slightly curved line of best fit ☐

f) Explain why sound gets quieter as distance increases, use ideas about amplitude in your anwer. (2 marks)

_____

_____

Teacher ticks here	Tick	Student comment: How to improve
Excellent homework **(good comment)**		
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Task 3

Topic: Waves – Sound

Instructions: Complete the following tasks to understand

1. **Complete the keywords for the following definitions using the following word bank:**

luminous | **medium** | **normal** | **oscillation** | **photo-sensitive** | **vacuum**

Definition	Key Word
An absence of matter.	
A substance or material that carries a wave.	
A word that describes objects that emit light.	
A line at right angles to a surface.	
Reacting to light, for example, by changing colour or producing an electrical signal.	
Regular movement from the resting position which varies in position and magnitude.	

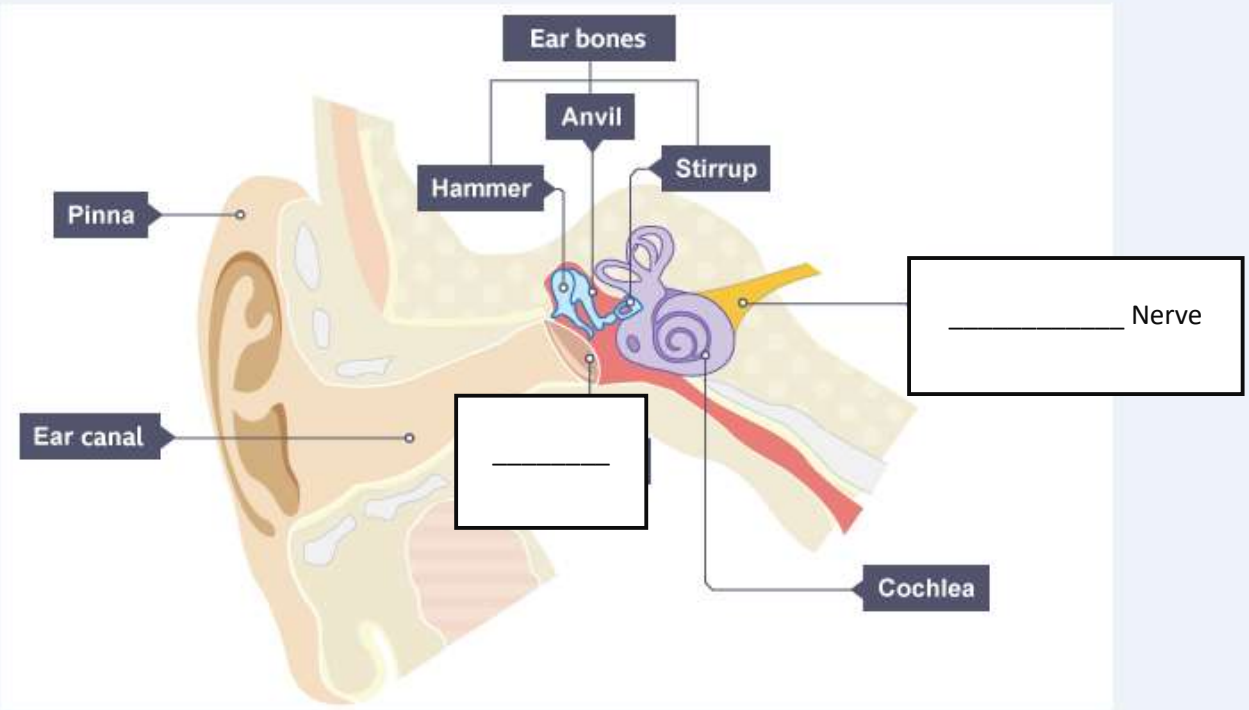
2. Draw a diagram of the following types of waves, include an example of each below.

Labels to include: oscillation, wavelength, amplitude, rest position

a. Transverse wave

b. Longitudinal wave

3. Label the following diagram of the ear:



4. State the function of each of the following:

a. Ear drum = _____

b. Auditory nerve = _____

c. Cochlea = _____

5. Describe how sound is transferred from the environment to the auditory nerve (3 marks)

_____

_____

_____

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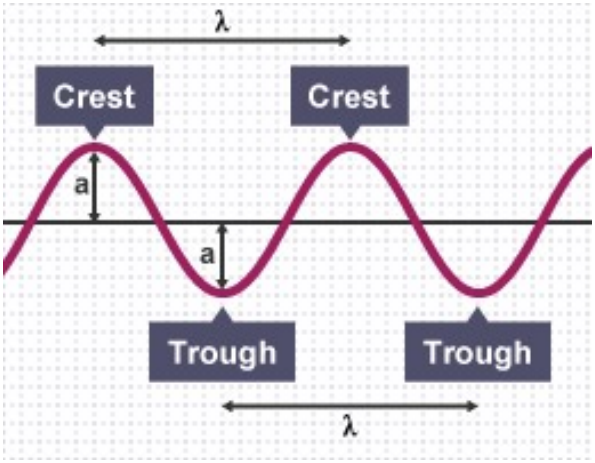
Task 4

Topic: Waves – Frequency and Amplitude

Instructions: Use the information to understand frequency and amplitude.

Information section 1:

Amplitude: The amplitude of a wave is the distance from the centre line (or the still position) to the top of a peak/crest or to the bottom of a trough. Shown by a. The larger the amplitude, the louder the sound is.



Questions 1

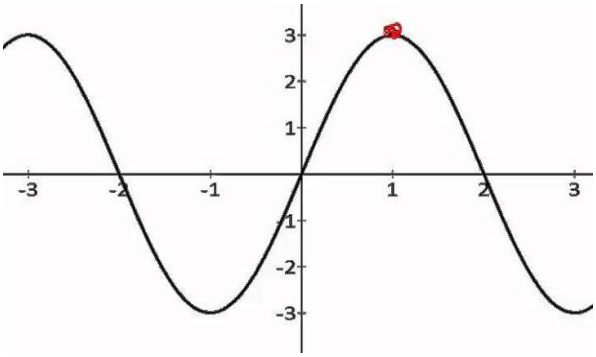
1. Which of the following has a larger amplitude? Circle the letter.

a. 

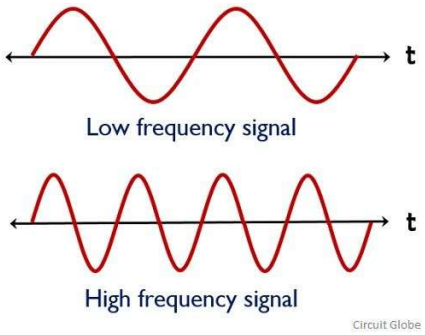
b. 

c. 

2. What is the amplitude of this wave? Circle the letter.
   a. 1
   b. 2
   c. 3
   d. 4



Information set 2: Frequency: The *frequency* (Hz) of a wave is the number of waves passing a point in a certain time. We normally use a time of one second, so this gives frequency the unit *hertz* (Hz) since one hertz is equal to one wave per second.

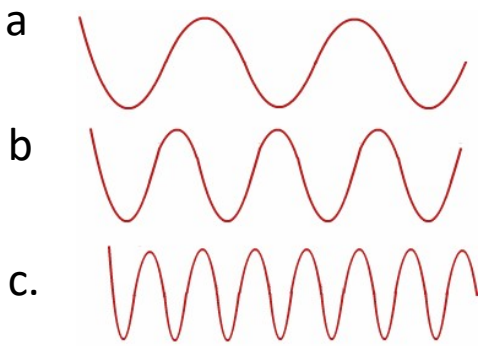


Question set 2:

3. State the unit for frequency. _____ (____)

4. High frequency means what about the sound?

a. High pitch
b. Low pitch
c. Which of the following shows the highest frequency? Circle the wave.



d. Draw wave that decreases in frequency but increases in amplitude (gets louder and the pitch gets deeper)

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Task 5

Topic: Chemical Reactions (Y7 Periodic table recap)

Instructions: Complete the tasks below using the periodic table in your diary and the internet.

(1)	(2)											(3)	(4)	(5)	(6)	(7)	(0)
1		Key: atomic number, Symbol, name, relative atomic mass															18
1 H hydrogen 1.0	2											13	14	15	16	17	2 He helium 4.0
3 Li lithium 6.9	4 Be beryllium 9.0											5 B boron 10.8	6 C carbon 12.0	7 N nitrogen 14.0	8 O oxygen 16.0	9 F fluorine 19.0	10 Ne neon 20.2
11 Na sodium 23.0	12 Mg magnesium 24.3	3	4	5	6	7	8	9	10	11	12	13 Al aluminium 27.0	14 Si silicon 28.1	15 P phosphorus 31.0	16 S sulfur 32.1	17 Cl chlorine 35.5	18 Ar argon 39.9
19 K potassium 39.1	20 Ca calcium 40.1	21 Sc scandium 45.0	22 Ti titanium 47.9	23 V vanadium 50.9	24 Cr chromium 52.0	25 Mn manganese 54.9	26 Fe iron 55.8	27 Co cobalt 58.9	28 Ni nickel 58.7	29 Cu copper 63.5	30 Zn zinc 65.4	31 Ga gallium 69.7	32 Ge germanium 72.6	33 As arsenic 74.9	34 Se selenium 79.0	35 Br bromine 79.9	36 Kr krypton 83.8
37 Rb rubidium 85.5	38 Sr strontium 87.6	39 Y yttrium 88.9	40 Zr zirconium 91.2	41 Nb niobium 92.9	42 Mo molybdenum 95.9	43 Tc technetium	44 Ru ruthenium 101.1	45 Rh rhodium 102.9	46 Pd palladium 106.4	47 Ag silver 107.9	48 Cd cadmium 112.4	49 In indium 114.8	50 Sn tin 118.7	51 Sb antimony 121.8	52 Te tellurium 127.6	53 I iodine 126.9	54 Xe xenon 131.3
55 Cs caesium 132.9	56 Ba barium 137.3	• 57–71 lanthanoids	72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.8	75 Re rhenium 186.2	76 Os osmium 190.2	77 Ir iridium 192.2	78 Pt platinum 195.1	79 Au gold 197.0	80 Hg mercury 200.6	81 Tl thallium 204.4	82 Pb lead 207.2	83 Bi bismuth 209.0	84 Po polonium	85 At astatine	86 Rn radon
87 Fr francium	88 Ra radium	• 89–103 actinoids	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium	111 Rg roentgenium	112 Cn copernicium		114 Fl flerovium		116 Lv livermorium		

• 57 La lanthanum 138.9	58 Ce cerium 140.1	59 Pr praseodymium 140.9	60 Nd neodymium 144.2	61 Pm promethium 144.9	62 Sm samarium 150.4	63 Eu europium 152.0	64 Gd gadolinium 157.2	65 Tb terbium 158.9	66 Dy dysprosium 162.5	67 Ho holmium 164.9	68 Er erbium 167.3	69 Tm thulium 168.9	70 Yb ytterbium 173.0	71 Lu lutetium 175.0
• 89 Ac actinium	90 Th thorium 232.0	91 Pa protactinium	92 U uranium 238.1	93 Np neptunium	94 Pu plutonium	95 Am americium	96 Cm curium	97 Bk berkelium	98 Cf californium	99 Es einsteinium	100 Fm fermium	101 Md mendelevium	102 No nobelium	103 Lr lawrencium

1. On the periodic table above, identify where the groups are.
2. On the periodic table above, write the numbers for the period number.
3. On the periodic table above, circle the following elements: Hydrogen, Oxygen, Iron, Neon, Helium, Sodium.

4. Write the chemical formula for the following elements in the table below. The first one has been done for you.

Name of element	**Chemical formula**
Oxygen	O
Calcium	
Sodium	

5. Identify some common elements and compounds below:

Chemical formula of element/compound	**Name of the element/compound**
H_2O	Water
CO_2	
O_2	
Challenge: $C_6H_{12}O_6$	

5. Complete a definition for each of the following. This must be at least 1 sentence long.

1. Reactant: _____
2. Product: _____
3. Thermal decomposition: _____
4. Combustion: _____
5. Acid: _____
6. Base: _____
7. Alkali: _____
8. Metal carbonate: _____
9. pH scale: _____
10. pH indicator: _____

Teacher ticks here	Tick	Student comment: How to improve
Excellent homework **(good comment)**		
Good/completed		
Requires improvement		
Incomplete/unsatisfactory		

Peer assessed / Self-

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Task 6

Topic: Chemical Reactions: Balancing equations

Instructions: **Identify the number of atoms of each element in the examples below. Use this to explain whether the equations are balanced or not. The first one has been done for you**. Then, **balance the equation**.

1.

$2H_2$ + O_2 →· $2H_2O$

On the reactants' side	Element	On the products' side
4	H	4
2	O	2

Balanced equation:

2.

$2NaOH$ + H_2SO_4 →· Na_2SO_4 + $2H_2O$

On the reactants' side	Element	On the products' side

Balanced equation:

3.

N_2 + H_2 →· $2NH_3$

On the reactants' side	Element	On the products' side

Balanced equation:

6.

$Al(OH)_3$ + $3H_2SO_4$ →· $Al_2(SO_4)_3$ + $6H_2O$

On the reactants' side	Element	On the products' side

Balanced equation:

Teacher ticks here	Tick	Student comment: How to improve
Excellent homework **(good comment)**		
Good/completed		
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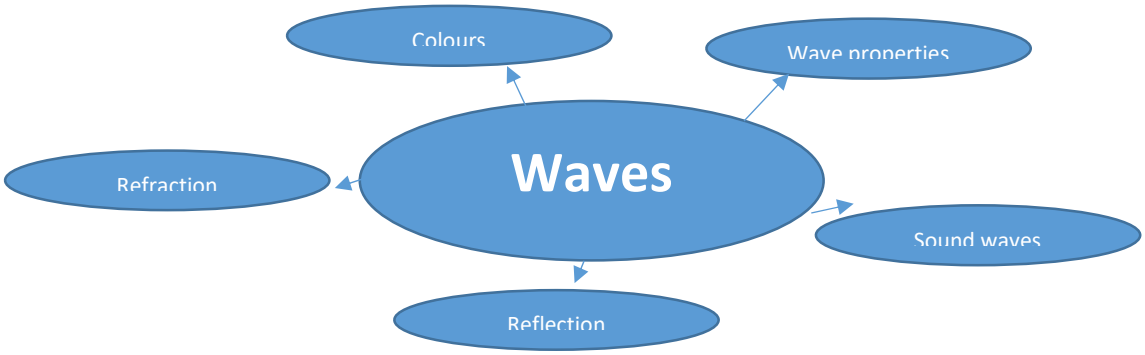
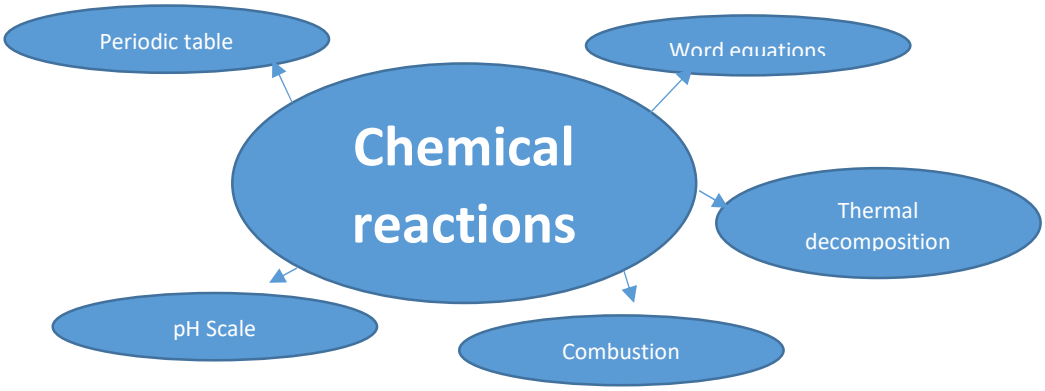
Peer assessed / Self-

Task 7

Topic: Revision homework – Waves and Chemical Reactions

Instructions: Complete the poster below to revise Waves and Chemical Reactions. This should cover all of the points below.





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